

Original Research Article

Outcomes of E learning in a clinical context

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Abstract

Background: E learning refers to the use of Internet technologies to deliver a broad array of solutions that enhance knowledge and performance. It is more often used by medical educators in basic science courses than in a clinical evaluation.

Materials and methods: An observational study was carried out in the Department of General Surgery among undergraduate medical students to know the impact of e-learning in the acquisition of clinical skills required during evaluation of an inguinoscrotal swelling. A total of 60 students were divided into two groups of 30 each. Group A students were trained by conducting bed side clinics on patients while students from Group B were trained using YouTube videos.

Results: At the end of these sessions, all the students were assessed by Objective Structured Clinical Examination on patients presenting with inguinoscrotal swelling with a check list. Out of 20 marks students from group A had a mean of 16.4 and the mean in the E learning group was 14.1 and the P value was .004 which was statistically significant.

Conclusion: E learning by using videos cannot substitute traditional bed side teaching but it can impart basic clinical skills to a certain extent in a resource constrained situation.

Key words

E learning, Clinical signs, Hernia.

Introduction

In the face of resource-constrained situations with severe shortage of patients, medical schools often look at e-learning for an improved access to medical education [1]. Although reasons for adopting e-learning are varied, expanded access

to education was at the core of e-learning implementation which included providing supplementary tools to support faculty in their teaching, expanding the pool of faculty by connecting to others, and sharing the digital resources [1]. Having students acquire

competency in basic clinical skills is an important goal of medical education [2].

In a traditional curriculum, medical students are expected to acquire clinical competence through the apprenticeship model using the Halstedian 'see one, do one, and teach one' approach [3]. E-learning refers to the use of Internet technologies to deliver a broad array of solutions that enhance knowledge and performance [4]. It is more often used by medical educators in basic science courses than in a clinical evaluation. E-learning is also called web-based learning, online learning, distributed learning, computer-assisted instruction, or Internet-based learning [4].

Psychomotor skills are best learned by doing them and not by watching videos. However, e-learning can have a role to play as a supplementary tool in imparting the psychomotor skills in the absence of real patients [5]. Unlike the traditional method of imparting clinical skills which also focuses on attitudes and values among the students e-learning might not highlight this important component [6]. In diverse medical education contexts, e-learning appears to be at least as effective as traditional instructor led methods where the students do not see e-learning as replacing traditional instructor led training but as a complement to it [7]. E-learning is one of the challenges for the future. New paradigms have entered in teaching and learning through e-learning in anything, for anyone, at anytime and anywhere for life [8].

Aim

- To look at the outcomes of e-learning among the first clinical semester students in the acquisition of psychomotor skills related to clinical evaluation of patients admitted with Inguino scrotal swelling to General surgery ward.

Objectives

- To study the outcomes of e-learning among the medical students during

clinical evaluation of a patient presenting with inguinoscrotal swelling.

- To compare the outcomes of e-learning with traditional case based learning.

Material and methods

It was a prospective observational study done from October 2014 to December 2014.

Target: 1st clinical semester students posted to the Department of Surgery, Gandhi Hospital as part of their clinical postings.

Sample size: 60 students.

Inclusion criteria

- 1st clinical semester undergraduate MBBS Students posted to the surgical wards as part of their clinical postings in the Department of Surgery, Gandhi Hospital.
- Willingness to participate in the study.

Exclusion criteria

- Students who were absent for more than 2 sessions of training.
- Students who were not willing to participate in the study

Methodology

60 students were randomly assigned into two groups of 30 each.

Group A (Traditional group): Students were trained in the conventional method of demonstration of clinical Signs during examination of a patient presenting with Inguino scrotal Swelling admitted to the surgical ward.

Group B (e-learning group): Students were demonstrated the clinical signs to be elicited in a patient with inguinoscrotal swelling using YouTube videos as a learning tool.

At the end of the sessions, assessment was done by Objective Structured Clinical examination (OCSE) where in the students from both the groups were exposed to real patients with inguinoscrotal swelling and an objective evaluation was carried out regarding the elicitation of clinical signs in a patient with inguinoscrotal swelling.

The evaluation was done using a check list with ten components each one carrying 2 marks and a total score of 20 was assigned for the task. The assessors who participated in this session were not aware of the group which the student belonged to and essentially they were kept blind.

Results

The scores from both the groups were compared and a statistical Analysis was drawn (**Table – 1, Table - 2**).

Table – 1: Mean scores of both groups.

S. N O	Questions	Group –A TRADITIONAL Mean Scores	Group-B E-LEARNING Mean Scores	P value
1	Ensured Privacy	1.93	1.46	0.0005
2	Examination in standing position	1.86	1.8	0.34
3	Ensured Reducibility	1.86	1.6	0.01
4	Elicited Cough Impulse	2	1.93	0.001
5	Performed Ziemann’s Technique	1.8	0.73	0.002
6	Performed Deep Ring Occlusion Test	1.93	1.8	0.005
7	Performed Finger Invagination Test	1.23	1	0.89
8	Performed palpation of the Testis	1.06	1	0.6
9	Examination for tone of the Abdominal Muscles	1.33	1	0.74
10	Diagnosed the condition correctly	1.93	1.8	0.005

Table – 2: Tradition vs E learning group.

Traditional /e learning Group

Traditional Group	E-learning Group
Average :16.9	Average :14.1333
Standard Deviation 1.53914	Standard Deviation2.63574
P value 0.004	

Discussion

E- Learning has been a part of traditional class room teaching and its role in providing an effective teaching/ learning experience is well established. Present study was an attempt to see whether the same kind of results of traditional bed side clinical teaching can be extrapolated to the students engaged in the evaluation of an inguinoscrotal swelling using e learning as a tool.

Whether the patient was examined in Privacy?

There were 29 students who have ensured privacy in the traditional group with a mean score of 1.93 where as only 22 students have ensured privacy in the e -learning group with a mean score of 1.46. The p value was 0.0005 which was statistically significant. This proves the fact that emotional element of teaching learning experience of the traditional method of bed side teaching is at stake during the process of e -learning.

Whether the patient was examined initially in standing position?

It is mandatory that the patient with inguinoscrotal swelling should be examined in standing position and this was correctly enforced by both the groups with 28 students of the traditional group scoring a mean of 1.86 and 27 from the e learning group scoring a mean of 1.8. The P value was 0.34 which was statistically not significant.

Whether the learner ensured the reducibility of the swelling by making him lie-down in supine position?

Reducibility is an important clinical sign to be looked for in an Inguinal hernia and this was elicited by 28 students from the traditional group with a mean score of 1.86 where as 24 students from the e learning group have ensured reducibility with a mean score of 1.6. The p value was 0.01 which was statistically significant.

Whether the learner had looked for cough impulse after the swelling got reduced?

Cough Impulse is an important clinical sign to be elicited to confirm the diagnosis of hernia which was successfully elicited by all the students from the traditional group with a mean score of 2 and the in the e learning group about 29 students could elicit this sign with a mean score of 1.93. The p value was .00001 which was significant.

Whether the learner had performed Ziemann's Technique to differentiate various types of Hernias?

Ziemann's technique is clinical sign which can be elicited only with a proper orientation of the anatomy and requires a complex technical skill. This was correctly performed by 27 students from the traditional group with a mean score of 1.8 where as only 11 students from the e learning group could do it correctly with a mean score of 0.73. The p value was .0002 which was statistically significant.

Whether the learner had performed deep ring occlusion test to differentiate direct from indirect inguinal hernia?

Deep ring occlusion test is an important test which differentiates Direct from Indirect Inguinal hernia which was correctly performed by 29 students from the traditional group with a mean score of 1.93 where as 27 students from the e learning could correctly get the test with a mean score of 1.8. The P value was .0005 which was statistically significant.

Whether the learner had done finger invagination test to assess the patulous superficial inguinal ring?

Finger invagination test is technically a complex clinical sign elicited in a patient with inguinal hernia where most of the students from both the groups failed to do it correctly the traditional group faring better than the e learning group. The mean of the traditional group was 1.23 where as mean from the e learning group was 1. The P value was 0.89 which was statistically not significant.

Whether the learner has palpated the testis separately in the scrotum?

Palpation of the scrotum for the testis is a part of the examination which is often not done by the students during the examination of the hernia and the results are same in the present study where only 16 students from the traditional group and 15 students from the e learning group palpated the testis. The mean score of the traditional group was 1.06 where as the mean from the e learning group was 1 with a p value of 1 which was statistically not significant.

Whether the learner looked for the tone of the abdominal muscles?

Again looking for the tone of the abdominal muscles is mandatory during a clinical evaluation of a hernia which was done by 20 students from the traditional group with a mean score of 1.33 where as only 15 students looked for the tone of the abdominal muscles from the e learning group with a mean of 1 with a p value of .34 which was not statistically significant.

Whether the learner could arrive at the correct diagnosis?

Diagnosis of a hernia is mostly by clinical evaluation and it is possible only by a systematic and meticulous examination. 29 students from the traditional group with a mean of 1.93 and 27 students from the e learning group with a mean of 1.8 could get it correctly. All those students who could not elicit the deep ring occlusion test correctly were unable to make a correct and a complete diagnosis. The p value was .005 which was statistically significant.

The students of traditional bed side teaching had put up a better performance, scoring a mean of 16.4 with a standard deviation of 1.53 where as students from the e learning group scored a mean of 14.1 with a standard deviation of 2.63. The p value was .004 which was statistically significant reemphasizing the role of traditional bed Side teaching in imparting clinical skills and Knowledge.

Conclusion

Though there is no substitute for traditional bed side teaching, e-learning appears to be also effective in ensuring basic clinical skills among the learners. E learning cannot be an alternative tool in enriching the clinical skills among the learners but it can be a supplementary tool. E Learning is changing with evolving new models, technologies and designs, but still it cannot be compared with traditional bed side teaching which ensures a rich emotional learning experience among the learners. The time has come to add emotions to 'e' learning to give it a new and wider dimension.

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